

Apodasmia ceramophila, a new Western Australian species of Restionaceae

Barbara G. Briggs and Lawrence A.S. Johnson[†]

National Herbarium of New South Wales, Botanic Gardens Trust Sydney,
Mrs Macquaries Road, Sydney NSW 2000, Australia.
barbara.briggs@rbgsyd.nsw.gov.au

Abstract

Apodasmia ceramophila B.G.Briggs & L.A.S.Johnson, a species of Restionaceae subfamily Leptocarpoideae, from the south of Western Australia is described. This widely dispersed and salt-tolerant genus of the *Leptocarpus* clade also has a species in each of south-eastern Australia, New Zealand and Chile.

Introduction

The name *Apodasmia* B.G.Briggs & L.A.S.Johnson is from the Greek *apodasmios*, separated, and refers to the widely disjunct distribution of the four species in this genus (Briggs and Johnson 1998a, Briggs 2001). One is found in each of south-western Australia [*A. ceramophila* B.G.Briggs & L.A.S.Johnson, described below], south-eastern Australia [*A. brownii* (Hook.f.) B.G.Briggs & L.A.S.Johnson], New Zealand [*A. similis* (E.Edgar) B.G.Briggs & L.A.S.Johnson] and Chile [*A. chilensis* (Gay) B.G.Briggs & L.A.S.Johnson]. The features differentiating *Apodasmia* from other genera of the *Leptocarpus* clade are given by Briggs and Johnson (1998a) and by Briggs (2014). Spikelet structure (a general feature of male and female inflorescences of almost all Leptocarpoideae) is not apparent in female inflorescences of *Apodasmia*: the glumes and flowers of several or many spikelets are crowded into dense fascicles surrounded by broad spathes. Some flowers appear associated with a glume but other glumes show groups of 2 or 3 flowers in the axil. Bracts are lacking on the pedicel and the three outer tepals are unequal in length.

All species of *Apodasmia* are salt-tolerant, although not all are limited to saline sites. The habitat of *A. similis* in New Zealand is described as 'Coastal among dunes and in salt marshes. Inland on marshy lake shores' (Edgar 1970); *A. brownii* is similarly a characteristic saltmarsh plant in Tasmania (Kirkpatrick and Glasby 1981) but in Victoria is 'Widespread in sandy soils of heathlands. Often tolerating saline conditions' (Conn 1994). Specimens of *A. chilensis* are annotated as from semi-saline sites (e.g. *Briggs 9421* [NSW]). Many of the sites of *A. ceramophila* are affected by salinity (e.g. Lake Muir, see Smith 2003), but it can also be found in non-saline sites. The New Zealand and Chilean species are very similar, and different in aspect from the Australian species. Briggs and Johnson (1998b) questioned whether they should be recognised as distinct species but, now that we have seen more specimens and seen both in the field, it is apparent that the Chilean species has consistently taller culms that are usually also stouter and less crowded. The internodes and sheaths of the culms are longer.

[†]Deceased 1997.

However, apart from the taller culms, these features are too variable to readily differentiate the species. The few male specimens of *A. chilensis* studied also have glumes with a narrower distal margin.

Bayesian analysis of concatenated *trnL*–*F* and *trnK* data from the four species has shown that they form a strongly supported clade, closely allied to *Chaetanthus* R.Br. (Briggs et al. 2014). However, the possibility that *Apodasmia* is embedded in *Chaetanthus* was not excluded in these analyses. Despite some uncertainty as to the generic status of *Apodasmia*, the Western Australian species, which has been known for more than two decades, is here formally described. The IBRA bioregions (IBRA 2012) are used to summarise the species distribution and the distribution map has been prepared from specimen records in the *Atlas of Living Australia* (ALA 2014). In the list of specimens, the originating herbarium precedes those holding duplicate specimens.

Key to species of *Apodasmia*

- 1 Culms ≥ 0.5 m tall, ≥ 1.5 mm diam.; anthers exerted 2
- 1* Culms ≤ 0.5 m tall, 0.4–1.5 mm diam.; anthers not or partially exerted 3
- 2 Culms 0.5–1.5(–1.8) m tall; distal margin of male glumes broad, pale and membranous (New Zealand) *A. similis*
- 2* Culms 1.5–3 m tall; distal margin of male glumes narrow, brown and opaque (Chile) *A. chilensis*
- 3 Rhizomes 3–8 mm diam.; culm sheaths with blunt, persistent lamina < 1 mm long and apical membranous margin < 1 mm broad; culms with 1–3 male spikelets or 1–5 female fascicles; male spikelets ovate-cuneate, almost as broad as long; male glumes 4–7 mm long (Western Australia) *A. ceramophila*
- 3* Rhizomes 1.5–4 mm diam.; culm sheaths with slender, caducous lamina > 1 mm long and apical membranous margin > 1 mm broad; culms with > 3 male spikelets or > 5 female fascicles; male spikelets narrow ovoid to cylindrical, more than three times as long as broad; male glumes 2.5–4.5 mm long (south-east Australia) *A. brownii*

Description of new species

Apodasmia ceramophila B.G. Briggs & L.A.S. Johnson, *sp. nov.*

'*Apodasmia ceramophila*' B.G. Briggs & L.A.S. Johnson, unpubl.: Briggs and Johnson (1999); Menev and Pate (1999); Paczkowska and Chapman (2000); '*Apodasmia* sp. A' Briggs et al. (2014).

Diagnosis: Distinguished among the species of *Apodasmia* by the following combination of characters: rhizomes stout (3–8 mm diam.) with culms closely spaced (1–5 mm apart); culms short (30–50 cm long), slender (0.4–1 mm diam.); culm sheaths with blunt, persistent lamina < 1 mm long and apical membranous margin < 1 mm broad; male inflorescence of 1–3 spikelets; male spikelets almost as broad as long; male glumes large (4–7 mm long); female inflorescence of 1–5 dense fascicles.

Type: Western Australia: E shore of Lake Muir, c. 3.5 km S of Muir Highway, 34°27'S 116°40'E, 28 Oct 1988, B.G. Briggs 8418 and L.A.S. Johnson ♀ (holo: NSW212496; iso: CANB, K, MO, PERTH).

Plants forming large diffuse or moderately dense patches to 1 m diam., resprouting after fire. *Rhizome* 3–8 mm diam., cataphylls overlapping, brown, scarious, covering a woolly pubescence. *Culms* spaced 1–5 mm apart on the rhizomes, terete, simple, 0.4–1 mm diam., 30–50 cm long, minutely striate, grey-green; internodes 4–7 cm long. *Culm sheaths* 6–12 mm long, brown; apex acute to mucronate; membranous margin very narrow; lamina minute, blunt. *Inflorescence:* male of 1–3 spikelets, erect or pendulous on short filiform pedicels, the pedicels whitish with a minute tomentum; females crowded in compact fascicles, the fascicles solitary and terminal or up to 5 arranged in a compact narrow terminal inflorescence up to 3 cm long. *Male spikelets* ovoid to ellipsoid, 5–10 mm long, nearly as broad as long, with c. 10–20 glumes, all fertile; glumes narrowly lanceolate, brown, glossy, glabrous, 4.2–6.6 mm long, tapering to a short erect mucro c. 1 mm long, membranous margin indistinct or absent. *Female fascicles* ovoid, 5–6 mm long; spathes broad-ovate, 5–8 mm long, coriaceous, brown, with a short mucro; membranous margin pale, narrow; glumes obovate, 3–4 mm long, apical margin glabrous to ciliate/fimbriate, mucronate with a short, erect mucro c. 0.5 mm long. *Male flowers* shortly pedicellate; tepals filiform, hyaline, glabrous, c. 2 mm long, outer tepals keeled; stamens 3; filaments 0.5–0.8 mm long; anthers 1.8–2 mm long, partially exerted; pistillode absent. *Female flowers* pedicellate, the pedicel base with a tuft of short, loosely erect, white hairs; tepals 6, 2.8–3.5 mm long, brown, rigid, very sparsely pubescent, margin serrate-ciliate/fimbriate; outer tepals lanceolate, keeled, the apex tapering into a short erect mucro; inner tepals longer, spatulate, acute to acuminate, slightly keeled to flat; staminodes absent; style 3-branched, mostly

connate, the free portion wholly stigmatic, the base persistent on the nut. *Nut* fusiform, 1.5–2 mm long, glossy-brown, smooth. (Fig. 1)

The epithet refers to the clayey soils of some (but not all) locations of the species, (Greek) *keramos* = potters clay; *philius* = loving, friendly.

Distribution: Western Australia: Swan Coastal Plain, Jarrah Forest and Warren regions: recorded from Forestdale on the southern Perth outskirts, the Yarloop and Collie districts, and from Lake Muir to near Mount Barker (Map: Fig. 2). In seasonally or permanently moist sites, on clay, peaty or sandy soils, mostly in semi-saline sites.

Conservation status: Widespread in scattered locations and sometimes locally abundant.

Selected specimens examined: Western Australia: Forestdale Lake Nature Reserve, *N. Gibson & M.N. Lyons* 1551, 12 May 1992 ♀ (PERTH, NSW); Yarloop, *R. Royce* 2247, 14 Oct 1947 ♀ (PERTH); NW of Harvey, near junction of Riverdale Road and Nicholson Road, *B. Briggs* 826, 22 Sep 1966 ♀ (NSW, PERTH), 827 ♂ (NSW, K); 3.3 km W of Cookernup on Riverdale Road, *B. Briggs* 8292 & *L. Johnson*, 25 Oct 1988 ♂ (NSW, CANB, PERTH), 8293 ♀ (NSW, CANB, MEL, PERTH); 23.5 km E of Collie, *R.J. Cranfield* 11509, 30 Oct 1997 (PERTH); 100 m S of Kulunilup Lake, *G.J. Keighery & N. Gibson* 2673, 22 Oct 1997 ♂, ♀ (PERTH, NSW); Lake Muir, *K. Meney* 912 & *J.S. Pate*, Jan 1991 ♀ (NSW); E shore of Lake Muir, c. 3.5 km S of Muirs Highway, *B. Briggs* 8417 & *L. Johnson*, 28 Oct 1988 ♂ (NSW, K, MEL, PERTH); Muir Highway, E of Rocky Gully at Kent River Bridge, *A.R. Annels* 5583 & *R.W. Hearn*, 23 Nov 1995 ♂ (PERTH, NSW); Muirs Highway at Kent River Bridge, *B. Briggs* 9960, 24 Oct 2008 ♂ (NSW, CANB, K, MO, NY); 23 km NW of Mount Barker, Wamballup Nature Reserve, *A.R. Annels* 3784, 22 Sep 1993 ♂ (PERTH, NSW); Denmark – Mount Barker Road 0.3 km NE of Harvey Road. *B. Briggs* 9961, 24 Oct 2008 ♀ (NSW, AD, CANB, K, MEL, MO).

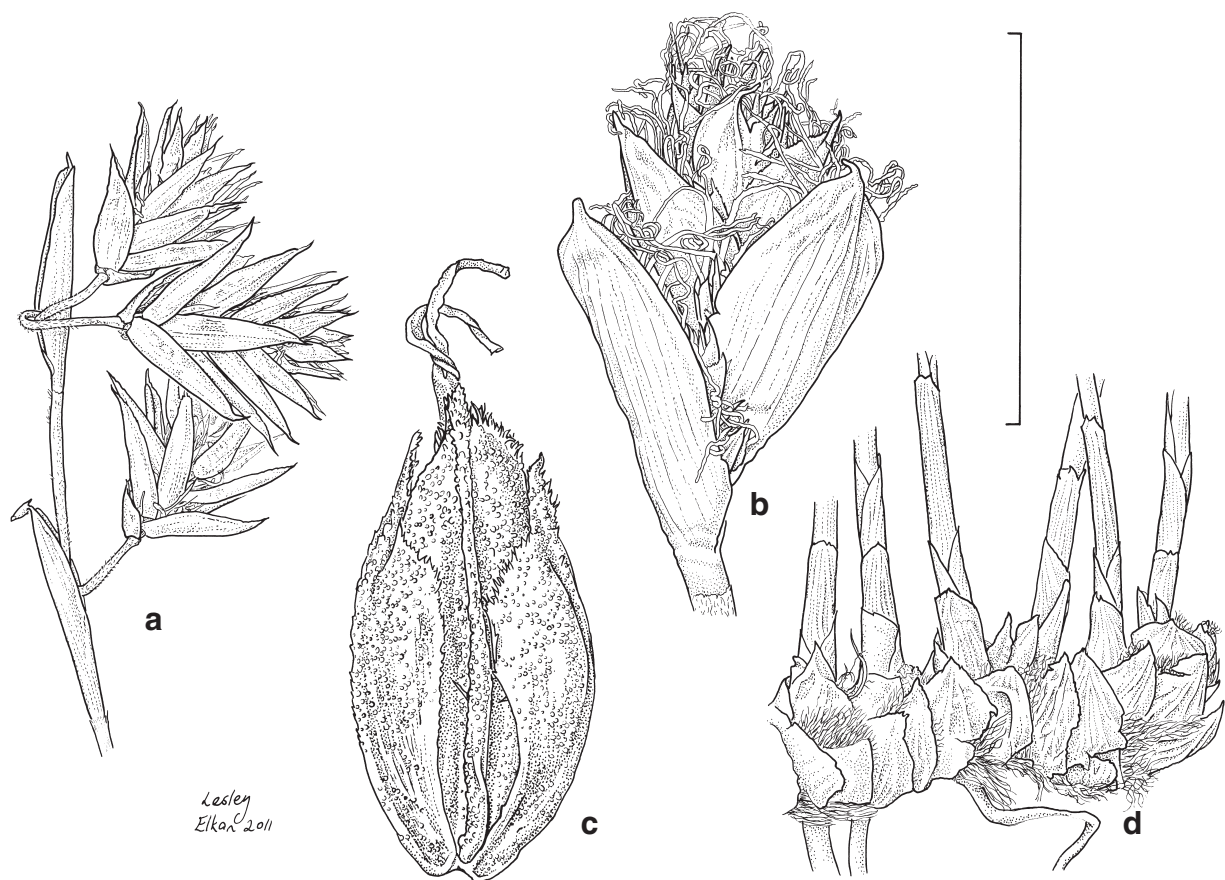


Fig. 1. *Apodasmia ceramophila*. **a**, part of male inflorescence (from *Briggs* 9960); **b**, part of female inflorescence; **c**, female flower; **d**, rhizome (b–d from *Briggs* 8418 and *Johnson*, holotype). Scale bar: a, d, = 2 cm; b = 1 cm; c = 0.25 cm.

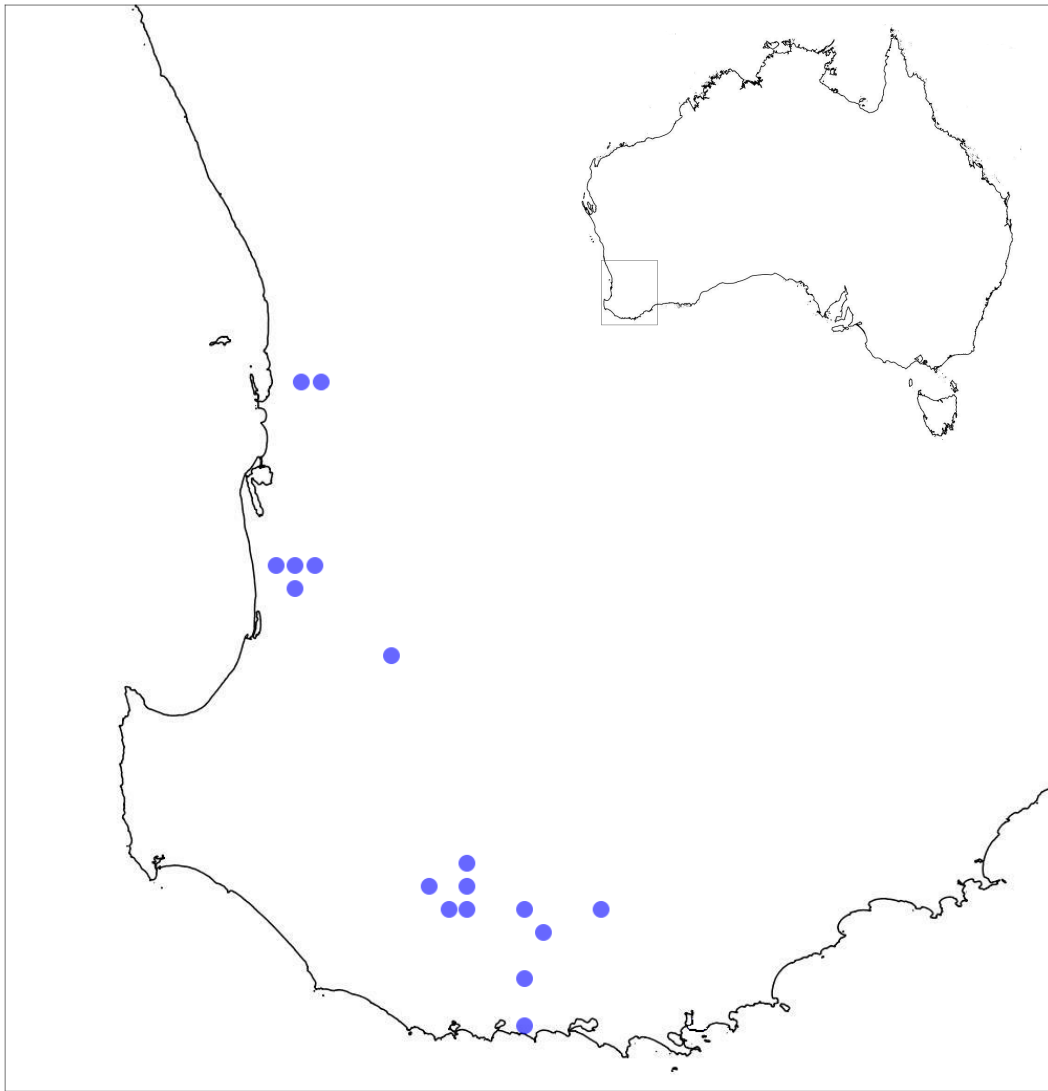


Fig. 2. Distribution of *Apodasmia ceramophila*.

Acknowledgments

The illustration is the expert work of Lesley Elkan (NSW). Julia Sideris (NSW) assisted in preparing the map. Excellent technical help by Carolyn Porter (NSW) and Siegfried Krauss (KPBG, formerly at NSW) made large contributions to our studies of Restionaceae, including this work.

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